

ASSESSING MOBILE INSTANT MESSAGING IN A FOREIGN LANGUAGE CLASSROOM

Alberto Andújar

University of Almería

Crta. De Sacramento s/n, Edificio C, La cañada, Almería, 04120, Spain

ABSTRACT

The present research represents a longitudinal investigation into Mobile Instant Messaging to develop second language skills. WhatsApp application was selected as the chat-based communication tool to carry out this study, which focuses on writing and speaking skills' development. Quantitative and qualitative analyses were used to tackle students writing ability in terms of grammatical, lexical and mechanical accuracy as well as syntactic complexity together with lexical diversity. Similarly, this mobile chat-based application was also used for the creation of a speaking group where the language-related episodes were analyzed as well as students overall performance in terms of pronunciation, grammar, vocabulary, fluency and comprehension. In order to observe the differences among the participants, a control and experimental group were set at the start of the study in each of the groups. Pre-post tests were given to the students and participation was tracked throughout the interaction. Screenshots in the application were also taken at different times in order to observe students' use of the language. Positive results were found in terms of accuracy in the experimental group whereas syntactic complexity yielded no significant differences. Regarding the speaking ability, students in the experimental group outperformed those in the control in each of the aspects analyzed, becoming a constant source of language-related episodes. Overall, the application was found to be a rich environment for language acquisition and learning thanks to the social interaction taking place in the application.

KEYWORDS

Mobile Instant Messaging, Mobile Learning, Language Learning, CALL, Virtual Learning, Learning Technologies

1. INTRODUCTION

The tremendous potential that mobile devices offer has been a matter of discussion within the scientific community during the last years. In this respect, retrospective works such as Burston (2014) emphasize the lack of curricular integration even in the case of those studies that have been proved to have a positive impact on students' development through different approaches and perspectives. While mobile phone companies compete to release the latest technological devices, educational institutions continue to provide syllabuses and curriculums that do not incorporate and, in some cases, ban the use of mobile devices in a classroom environment. Due to this fact, most of the studies in this field tackle the possibilities these devices offer out of the classroom, exploiting its ubiquitous characteristics (Koole, 2009; Kukulska-Hulme, 2012).

New ways of communication have changed the landscape of e-learning and chat-based communication tools are no exception. In this vein, the number of users in this kind of applications has increased swiftly reaching almost 1500 million by the end of 2017, and that is just exclusively the case of WhatsApp application (Statista). Nevertheless, there is a growing number of chat applications providing the same functionalities as this last one such as "Line", "Telegram", "Wechat", "Tango" which exploit the possibilities that data plans offer to provide free messaging services available to everyone.

As some experts in the field point out, education is shifting towards a model where autonomous learners who cooperate actively are responsible for the creation of content, participating in a student-oriented atmosphere that little have to do with traditional classroom environments (Otto, 2017).

From the teacher's perspective, and more specifically, in terms of second language teaching, the possibilities for interaction second language learners have in class are very scarce due to the constraints of traditional classroom environment such as number of students, limited time, or amount of contents to cover during a course. Therefore, teachers struggle to develop certain students' abilities as it could be writing or

speaking due to the constraints previously mentioned. Hence, in this manuscript we present Mobile Instant Messaging (MIM) as tool that allows the teacher to expand students' time, providing learners with a constant thread of conversation that fosters L2 interaction and learning. By increasing the interaction through the use of mobile chat-based conversation within a group, students have the opportunity to put into practice their second language as well as reflect on their language productions and possible errors throughout the process.

Overall, a longitudinal investigation of Mobile Instant Messaging use for second language development is presented, where social interaction, autonomous and collaborative learning, and language use create an environment that promotes second language development and learning in two different skills: writing and speaking.

2. BODY OF PAPER

2.1 Literature Review and Theoretical Background

Research in MIM has focused on the use of this kind of application and the analysis of the possibilities this platforms offer (e.g. Diaz, 2014; Morato-Paya, 2014; Padron, 2013; Tang and Foon Hew, 2017; Singh et al., 2018) as well as its technological, pedagogical and social affordances. In the field of language learning, it is worth mentioning Gutierrez Colón-Plana et al., (2016) study about improving reading comprehension through MIM as well as those regarding writing and speaking skills (Andújar, 2016; Andújar & Cruz-Martínez, 2017; Fattah, 2015) which are partly commented in this manuscript. Furthermore, WhatsApp has also been found to be a powerful tool to foster second language vocabulary as shown in different investigations where this skill was tackled (see, Hamad, 2017; Jafari & Chalak, 2016; Andujar, 2016). Its use was also explored in order to carry out peer and self-assessment of oral language proficiency (Samaie et al., 2018), nevertheless students presented a negative attitude towards the use of this kind of evaluation. Hence, further investigation of the potential and benefits this application offers for language development is needed so that teachers are able to exploit its characteristics in a second language environment.

Two main language theories underlie this investigation, firstly Vigotsky's (1978) theory about mediation and zone of proximal development. This sociocultural approach to language learning emphasizes the importance of the social context to develop cognition. In this sense, language is understood as process where interaction and collaboration facilitate acquisition (Donato, 2000; Gee, 2003). MIM becomes a fertile ground for authentic language interaction where students have the possibility to practice "on the go" (Kukulska-hulme, 2009). Secondly, Long's (1983) and Swain's (1985) contributions to interaction analysis play a fundamental role within the activity as students construct knowledge in active manner, focusing on meaning and not on isolated facts. Furthermore, because of its real-time nature, MIM contains repair moves and negotiations for meaning that have been found to promote second language development (Sotillo, 2000; Warschauer, 1996). Students modify their discourse in order to achieve understanding, collaborating and putting into practice their target language skills.

2.2 Study

The case study conducted for each of the skills differ from one another, being writing and speaking skills assessed in 2015 and 2016 respectively. Through the creation of a WhatsApp group and a series of premises given to students in advance we were able to evaluate these different skills. This premises dealt with limiting the writing WhatsApp group to the use of text messages in order to have enough data to measure writing skills and restricting the speaking WhatsApp group to voice messages so that we could measure students' speaking development. Furthermore, one student had to ask a question to their peers every day in order to maintain the conversation in the application. Image and video-sharing were allowed and no time restrictions were imposed throughout the activity. Each of the case studies had a control group in order to analyze the differences between the groups in terms of language development. Groups were composed by 30 participants each with a total of 120 students who joined a B1 course at the University of Almería.

To carry out this longitudinal investigation, different analyses were carried out depending on the skill under consideration. A mixed methods analysis was carried out where quantitative and qualitative data were investigated (Onwegbuzie, 2003). In all the cases apart from tracking students' messages in the application, pre-post test measures were taken in order to observe students' level in the different skills. An external rater was used during this process and the tests provided met the parameters set by the Common European Framework for Reference (CEFR).

In this vein, to assess students' writing skill in the foreign language, we carried out an analysis of the language gains in terms of grammatical, lexical and mechanical accuracy as well as syntactic complexity together with lexical diversity. As presented in Table 1 and Table 2, statistically significant results were found in terms of accuracy.

Table 1. Pre-post test measures of Accuracy for Texts Written in Control and Experimental Group

	Control group			Experimental group			Control group ^a			Experimental group ^a		
	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD
Error-free clauses	194	4.85	2.68	206	5.15	3.5	278	6.95	2.29	341	8.53	2.65
Error-free clauses per clause		0.28	0.19		0.31	0.22		0.43	0.15		0.61 ^b	0.2
Error-free T-units	140	3.5	2.3	159	3.97	3.03	201	5.03	1.9	283	7.08	2.2
Error-free T-units per T-unit		0.32	0.2		0.33	0.25		0.49	0.19		0.68 ^b	0.16
Errors	646	16.15	3.7	608	15.2	2.83	449	11.23	3.1	236	5.9	2.02
Errors per word		0.16	0.37		0.15	0.28		0.11	0.31		0.06 ^b	0.2

^aPost-test results in experimental and control group.

^bStatistically significant difference between experimental and control group ($p < .05$).

Table 2. Pre-Post Test Measures of Grammatical, Lexical, and Mechanical Accuracy for Texts Written In Control and Experimental Group

	Control group			Experimental group			Control group ^a			Experimental group ^a		
	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD
Grammar errors	231	5.77	1.86	212	5.3	1.65	161	4.02	1.31	76	1.9	0.81
Grammar errors per word		0.06	0.02		0.05	0.02		0.04	0.01		0.02 ^b	0.01
Lexical errors	232	5.8	1.72	223	5.58	1.79	169	4.23	1.67	40	1.1	0.64
Lexical errors per Word		0.06	0.02		0.06	0.02		0.04	0.02		0.01 ^b	0.01
Mechanical errors	185	4.62	1.56	176	4.4	1.05	118	2.95	1.1	79	1.98	0.92
Mechanical errors per word		0.05	0.02		0.04	0.01		0.03	0.1		0.02 ^b	0.01

^aPost-test results in experimental and control group.

^bStatistically significant difference between experimental and control group ($p < .05$).

No significant difference were found in terms of syntactic complexity together with lexical diversity as the mean segmental type token ratio (MSTTR) calculated yielded no significant difference between control and experimental group (See Table 3).

Table 3. Pre-post Test Measures of Complexity for Text Written In Control and Experimental Group

	Control group			Experimental group			Control group ^a			Experimental group ^a		
	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD
Clauses	682	17.05	3.08	672	16.8	3.96	646	16.15	2.68	562	14.05 ^b	2.71
T-units	438	10.95	2.85	476	11.9	3.44	413	10.33	2.7	416	10.4	2.96
Words per clause		5.86	0.67		5.95	0.58		6.19	0.6		7.11	0.54
Words per T-unit		9.13	1.97		8.4	1.89		9.68	1.87		9.61	1.8
Clauses per T-unit		1.55	0.31		1.41	0.27		1.56	0.28		1.36	0.22
MSTTR		0.68	0.07		0.68	0.05		0.75	0.05		0.82 ^a	0.04

^aPost-test results in experimental and control group.

^bStatistically significant difference between experimental and control group ($p < .05$).

The language-related episodes (LRE) (Swain & Watanabe, 2012) resulting from the interaction within the application were also investigated in the case of the speaking group. These LREs were operationalized as situations where students collaborated to achieve understanding and were tracked throughout the exchange that lasted for four months. Similarly, students' speaking development was investigated through an extensive tracking of the language used within the voice messages sent by students during the interaction. Pre-post measures were taken and LREs were observed and divided in two categories: negotiations for meaning and negative feedback (Bueno-Alastuey, 2013). In the case of negative feedback, it was operationalized as a move from the interlocutor towards a more target-like feature. This LRE was later subdivided into recasts and elicitations (Long, 1996). It is worth mentioning the great number of negotiations that took place during the process as presented in Table 4.

Table 4. Average Number and Types of Lres Signals in the Experimental Group per Month

Month	Negotiation	Negative Feedback	
		Recasts	Elicitation
1	362 (60%)	154 (25,5%)	87 (14%)
2	331 (62,2%)	130 (24,7%)	69 (13%)
3	278 (58,5%)	145 (30,5%)	52 (10,9%)
4	260 (57,5%)	115 (25,4%)	77 (17%)
5	273 (67,2%)	96 (23,6%)	37 (9,1%)
6	224 (67,4%)	78(23,4%)	30 (9%)

As we can observe in Figure 1, the number of language-related episodes decreased throughout the interaction, suggesting a lower number of situations where possible misunderstandings occurred.

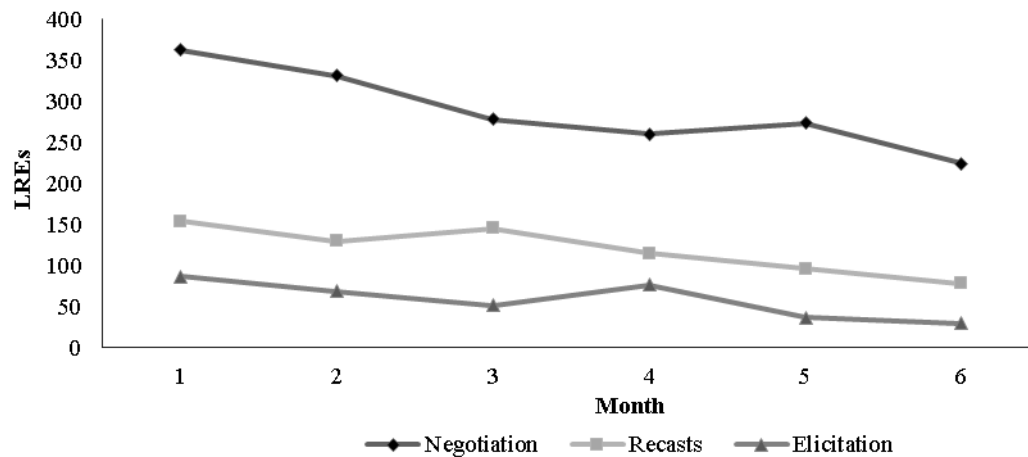


Figure 1. Trend of LREs per Month

Students performance was also analyzed with a pre-post test in the Speaking group as presented in Table 5 and 6. Results show statistically significant differences in each of the speaking skills measured, indicating a positive effect of the interaction.

Table 5. Pre-test Speaking Measures in the Control and Experimental Groups

	Pronunciation			Grammar			Vocabulary			Fluency			Comprehension		
	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD
Control	40	1.23	.86	40	14.25	5.02	40	7.70	3.05	40	4.70	1.53	40	10.65	2.77
Experimental	40	1.10	1.77	40	21	4.5	40	9.85*	3.66	40	4.88	1.58	40	13.90	2.24

* Statistically significant difference between experimental and control group

Table 6. Post-test Speaking Measures in the Control and Experimental Group

	Pronunciation			Grammar			Vocabulary			Fluency			Comprehension		
	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD	Total	Mean	SD
Control	40	1.80	.51	40	15	4.7	40	12.40	2.9	40	5.45	1.35	40	10.40	2.69
Experimental	40	2.25*	.43	40	23.40*	4.25	40	16.8*	2.74	40	8.65*	1.31	40	16.47*	2.5

* Statistically significant difference between experimental and control group ($p < .05$)

Qualitative information was also obtained through the screenshots taken from the application. These samples allowed us to observe if students kept repeating the same kind of mistakes later in the conversation. Students mistakes at the beginning were tracked and analyzed throughout the activity. It is worth mentioning cases of low-proficient students that were helped by peers when they did not achieve communication. As an example we could use the word "Great":

Student A: 'I went to Carlos' party and it was /grit/

Student B: 'Grit'?, I don't understand

Student A: mm.. yes /grit/

Student B: Oh! You mean great!

Student A: Yes, sorry my pronunciation is really bad...

Figures 2 and 3 show an example of the interaction carried out in the group.

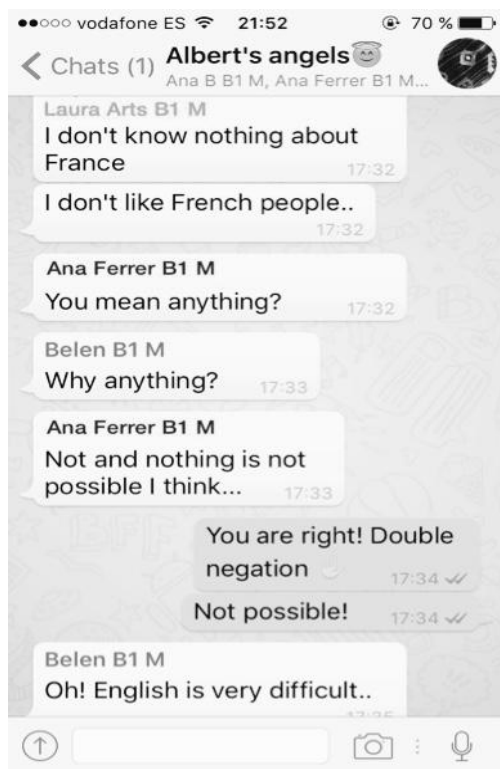


Figure 2. Sample of the conversation



Figure 3. Sample of the conversation

The characteristics this virtual environment offers for second language development are varied. Nevertheless, one of the main qualities that MIM offers with respect to other chat applications has to do with its synchronous and asynchronous character. This feature confers this virtual tool with a wide range of possibilities for language exchange, many times with interaction taking place within seconds which lead to a different kind of exchange from the one we normally find in asynchronous communication. Some of the features of face-to-face communication are present in the conversation, which adds an extra value to the language exchange.

3. CONCLUSION

Mobile instant messaging allowed students to interact outside the class on a daily basis. This possibility led to a constant thread of conversation within the application that benefitted students as they were able to increase their practice time using the target language. The application was found to be beneficial, particularly in terms of accuracy in the case of the writing WhatsApp group where students experienced a significant decrease in the number of mistakes they made, whether lexical, grammatical or mechanical. This may be due to the fact that non-native speakers when speaking a second language (L2) do not use abbreviations as, firstly, they do not have the knowledge of the abbreviations in the L2 and secondly, they aim for accuracy in order to make themselves understood. In terms of speaking development, the overall performance of the experimental group students was higher than those in the control in each of the skills tackled, emphasizing the potential of the application for second language development. Interestingly, students listen to their recordings twice, reproducing their language samples and in many cases, realizing if they have committed an error with a particular pronunciation, word or phrase. Teacher's help in these cases was not needed as students were able to perceive and repair their own errors. Thus, this chat-based environment became an enriching tool that help students overcome the tendency of mechanical repetition and traditional instruction by integrating communicative drills. Autonomy and social interaction led to negotiation for meaning, creating a learning environment that breaks temporal spatial lines.

Possible limitations during the investigation were tackled in advanced and students participation was tracked in order to guarantee that improvements did not just take place because of in-class tuition. Qualitative information was also obtained from screenshots taken in the application. Practical considerations such as owning a mobile phone or internet connectivity were also regarded.

Participation during the activity was remarkable, quickly earning students' acceptance and reducing teacher-student distance. Learners felt comfortable to tinker with the target language, creating a friendly environment for the participants and therefore facilitating learning. This environment as well as the kind of interaction taking place in the activity resembled face-to-face communication due to its often synchronous nature. The teacher role was, in this case, emphasized as he was able to provide rich input and authentic interaction, factors that may lead to second language development.

Overall, teachers cannot just limit themselves to in class teaching as the opportunities to develop a language within a classroom environment are very scarce and it is mandatory to exploit the resources technology continuously offers to expand in-class time as well as to walk in unison with the latest changes in today's society.

ACKNOWLEDGEMENT

We would like to thank professors Marisol Cruz and Tim Spratt for the assistance provided to this investigation.

REFERENCES

- Andújar-Vaca, A., and Cruz-Martínez, M. S. 2017. Mobile Instant Messaging: Whatsapp and its Potential to Develop Oral Skills. *Comunicar*, 25(50), 43-52. <https://doi.org/10.3916/C50-2017-04>
- Andujar, A. 2016. Benefits of Mobile Instant Messaging to Develop ESL Writing. *System*, 62, 63-76. <https://doi.org/10.1016/j.system.2016.07.004>
- Bueno-Alastuey, M.C. 2013. Interactional Feedback in Synchronous Voice-based Computer Mediated Communication: Effect of Dyad. *System*, 41(3), 543-559. <https://doi.org/10.1016/j.system.2013.05.005>
- Burston, J. 2014. The reality of MALL: Still on the fringes. *CALICO Journal*, 31(1), 103.
- Díaz, J. 2014. *El WhatsApp como herramienta de intervención didáctica para fomentar el aprendizaje cooperativo* [WhatsApp as a tool of educational intervention to foster cooperative learning]. Unpublished Paper presented at X *Jornadas De Material Didáctico y Experiencias Innovadoras En Educación Superior*. Buenos Aires, Argentina. Retrieved from <http://eprints.rclis.org/23597/>.
- Donato, R. 2000. 'Sociocultural contributions to understanding the foreign and second language Classroom', in J. Lantolf (ed.), *Sociocultural theory and second language learning*, pp. 27-50, Oxford University Press, Oxford.
- Fattah, S. F. E. S. A. 2015. The effectiveness of using WhatsApp messenger as one of mobile learning techniques to develop students' writing skills. *Journal of Education and Practice*, 6(32), 115-127.
- Gee, J. P. 2003. *What Video Games Have to Teach Us About Learning and Literacy*, Palgrave Macmillan, New York.
- Hamad, M. M. 2017. Using WhatsApp to enhance students' learning of English language "Experience to share". *Higher Education Studies*, 7(4), 74-87.
- Jafari, S. & Chalak, A. 2016. The role of Whatsapp in teaching vocabulary to Iranian EFL learners at junior high school. *English Language Teaching*, 9(8), 85-92.
- Koole, M. 2009. 'A model for framing mobile learning', in M. Ally (ed.), *Mobile learning: Transforming the delivery of education and training*, pp. 25-47, AU Press, Edmonton.
- Kukulska-Hulme, A. 2009. Will Mobile Learning Change Language Learning? *Recall*, 21(2), 157-165. <https://doi.org/10.1017/S0958344009000202>
- Kukulska-Hulme, A. 2012. How Should the Higher Education Workforce Adapt to Advancements in Technology for Teaching and Learning? *The Internet and Higher Education*, 15(4), 247-254. <https://doi.org/10.1016/j.iheduc.2011.12.002>
- Long, M. H. 1983. *Classroom-oriented research on second language acquisition*. Newbury House, Rowley.
- Long, M.H. 1996. 'The role of the linguistic environment in second language acquisition', pp. 413-469, in W. Ritchie, & T. Bathia (eds.), *Handbook of research on second language acquisition*, Academic Press, New York.

- Morato Paya, A. 2014. El WhatsApp como complemento del aprendizaje en la clase E/LE [WhatsApp as a learning complement in the classroom of E/LE]. *Revista Foro De Profesores De E/LE*, 10(1), 165-173.
- Nakahama, Y., Tyler, A., & Van-Lier, L. 2001. Negotiation of Meaning in Conversational and Information Gap Activities: A Comparative Discourse Analysis. *TESOL Quarterly*, 35, 377-404. <https://doi.org/10.2307/3588028>
- Onwuegbuzie, A.J., & Teddlie, C. 2003. 'A framework for Analyzing Data in Mixed Methods Research', pp. 351-383, in A. Tashakkori & C. Teddlie (eds.), *Handbook of Mixed Methods in Social and Behavioral Research*, Sage, Thousand Oaks, CA.
- Otto, S. E. (2017). 'From Past to Present: A Hundred Years of Technology for L2 Learning'. In C.A. Chapelle & S. Sauro (eds.), *The Handbook of Technology and Second Language Teaching and Learning*, pp. 10-25, John Wiley & Sons, New Jersey, USA.
- Padron, C. J. 2013. Teaching strategies based on WhatsApp instant messaging application only for phones (mobile learning) and its use to promote collaborative learning. *Revista De Tecnología De Información y Comunicación En Educación*, 7(2), 123-134.
- Plana, M. G. C., Escofet, M. I. G., Figueras, I. T., Gimeno, A., Appel, C., & Hopkins, J. 2013. Improving learners' reading skills through instant short messages: A sample study using WhatsApp. In *Proceeding of WorldCall 2013-Call: Sustainability and Computer-Assisted Language Learning*. Glasgow, UK, pp. 80-84.
- Samaie, M., Mansouri Nejad, A. & Qaracholloo, M. (2018). An inquiry into the efficiency of WhatsApp for self- and peer-assessments of oral language proficiency. *British Journal of Educational Technology*, 49(1), 111-126.
- Singh, H. K. D., Lim, T. M., Woo, T. K. & Fadzil, M. 2018. 'Mobile learning support to distance learners: using WhatsApp Messenger', pp. 109-119, in Li, K. C., Yuen, K. S & Wong, B. T. M. (eds.), *Innovations in open an flexible education*, Springer, Singapore.
- Sotillo, S. 2000. Discourse functions and syntactic complexity in synchronous and asynchronous communication. *Language Learning & Technology*, 4, 82-119.
- Statista. Retrieved from <https://www.statista.com/statistics/260819/number-of-monthly-active-whatsapp-users/>. Accessed 1/03/2018.
- Swain, M., & Watanabe, Y. 2012. Languaging: Collaborative dialogue as a source of second language learning. In C. Chapelle (ed.), *The encyclopedia of applied linguistics*, Wiley-Blackwell, Oxford.
- Tang, Y., & Hew, K. F. (2017). Is mobile instant messaging (MIM) useful in education? Examining its technological, pedagogical, and social affordances. *Educational Research Review*, 21, 85-104.
- Vygotsky, L. 1978. *Mind in society: The development of higher psychological processes*. Harvard University Press, Cambridge, MA.
- Warschauer, M. 1996. Comparing face-to-face and electronic discussion in the second language classroom. *CALICO Journal*, 13, 7-26.